

6/3/98

PC Code No: 128857

DP Barcode : D245542, D245550

MEMORANDUM

JUN - 3 1998

SUBJECT: Section 18-Use of Myclobutanil on Melons in Arizona

FROM: Kathryn Montague, Biologist *Kathryn V. Montague 5/17/98*
Thuy Nguyen, Chemist *Thuy Nguyen 5/19/98*
Environmental Risk Branch III
Environmental Fate and Effects Division (7507C)

THRU: Daniel Rieder, Chief *Daniel Rieder 6/3/98*
Environmental Risk Branch III
Environmental Fate and Effects Division (7507C)

TO: Robert Forrest, PM 05
Registration Division (7505C)

A. Risk Characterization Summary

The proposed use of myclobutanil on melons in Arizona does not appear to pose adverse effects to birds, mammals, fish, or aquatic invertebrates. Risk to nontarget plants could not be assessed due to lack of data; therefore, risk to plants remains a possibility, which could be minimized by taking precautions to minimize spray drift. Risk to nontarget insects could not be assessed due to lack of data; therefore, risk to nontarget insects remains a possibility from the proposed use of myclobutanil. Myclobutanil is relatively persistent, with an average field half-life of 129 days. The major route of dissipation is believed to be diffusion and dilution; myclobutanil appears to be resistant to most environmental breakdown processes.

B. Submission Purpose

The Arizona Department of Agriculture has applied for a special exemption to use Rally 40W fungicide containing myclobutanil on a total estimated 30,000 acres of melon crops to treat powdery mildew (*Spaerotheca fuliginea*). The maximum estimate for total required active ingredient is 18,000 lb ai for the season. This is based on up to 6 applications of Rally 40W at 4 oz. (0.1 lb ai) per acre applied by ground, at the first sign of disease. Applications are to be made with a 7-10 day treatment interval, with a 48-hour interval prior to harvest. Applications will be made between May 1998 and May 1999. Contact fungicides (copper, sulfur, chlorothalanil) are effective against powdery mildew at the site deposited; however, they are not systemic, and so do not provide adequate protection for the undersides of the leaves. The leaves die prematurely when the powdery mildew is not suppressed on the underside, resulting in lower yields for the crop. Registered systemic fungicides for powdery mildew control (triademefon, benomyl, and thiophanate-methyl) are no longer effective due to resistance. There are no effective cultural practices which adequately control powdery mildew.



2014116

Product Information:**Product Name:** Rally 40 WSP manufactured by Rohm and Haas Co.**Active Ingredient:** Myclobutanil.....40%**Inert Ingredients**.....60%**C. Environmental Assessment****1. Environmental Fate and Exposure Characterization****TABLE I:** Summary of Selected Environmental Fate Properties for Myclobutanil

Property	Range	Value used in assessment	Model
Solubility (water)	142 mg/L	142 mg/L	GENEEC
Hydrolysis $t_{1/2}$	stable at pH 5, 7, and 9	stable - (0 day)	GENEEC
Aquatic Photolysis $t_{1/2}$	stable	stable - (0 day)	GENEEC
Aerobic Soil Metabolism $t_{1/2}$	61-71 days in silt loam, but degradation rates slowed after increasing aging, and after 240 days, 34-37% of parent was still present.	see Terrestrial Field Dissipation	GENEEC SCI-GROW
Terrestrial Field Dissipation $t_{1/2}$	292 days in sandy loam, 92 days in loam soil	129 days = average of aerobic soil metabolism half-lives and terrestrial field dissipation half-lives	GENEEC SCI-GROW FATE
Anaerobic Soil Metabolism $t_{1/2}$	no appreciable degradation in 62 days	not considered	
Aerobic Aquatic Metabolism $t_{1/2}$	no data	(0 day)	
K_{ad}	1.46, 2.39, 4.44, 7.08, 9.77	see K_{oc} values	
K_{oc}	224, 265, 581, 936	581 = median	GENEEC SCI-GROW

2. Estimated Environmental Concentrations**Aquatic:**

The aquatic EECs presented below were generated using the GENEEC computer program developed by EFED. This program uses a variety of environmental fate

parameters in conjunction with the application rate to estimate the exposure to aquatic organisms from runoff.

GENEEC EECs (µg/L) for Myclobutanil Use on Melons--aerial spray
INPUT VALUES

RATE (#/AC) ONE(MULT)	APPLICATIONS NO.-INTERVAL	SOIL KOC	SOLUBILITY (PPM)	% SPRAY INCORP DRIFT DEPTH(IN)
.100 (.547)	6 7	581.0	142.0	5.0 0

FIELD AND STANDARD POND HALFLIFE VALUES (DAYS)

METABOLIC (FIELD)	DAYS UNTIL RAIN/RUNOFF	HYDROLYSIS (POND)	PHOTOLYSIS (POND-EFF)	METABOLIC (POND)	COMBINED (POND)
129.00	0	N/A	0.00-0.00	0.00	0

GENERIC EECs (IN PPB)

PEAK GEEC	AVERAGE 4 DAY GEEC	AVERAGE 21 DAY GEEC	AVERAGE 56 DAY GEEC
11.18	11.01	10.14	8.92

Terrestrial--Acute

Vegetation Type	Peak Maximum EEC ¹	Average Maximum EEC ¹
Short grass	131 ppm	84 ppm
Tall grass	60 ppm	39 ppm
Broadleaf plants/insects	74 ppm	47 ppm
Fruits/seeds	8 ppm	5 ppm

¹From FATE program-- based on 6 applications at 4 oz product (0.1 lb ai)/A with a 7-day application interval. Initial concentration was the maximum Kenaga value for the vegetation type. Average EEC is for a 48-day period following the initial application.

Terrestrial--Chronic

Vegetation Type	Peak Mean EEC ¹	Average Mean EEC ¹
Short grass	46 ppm	30 ppm
Tall grass	20 ppm	13 ppm
Broadleaf plants/insects	25 ppm	16 ppm
Fruits/seeds	4 ppm	2 ppm

¹From FATE program--based on 6 applications at 4 oz product (0.1 lb ai)/A with a 7-day application interval. Initial concentration was the mean Fletcher value for the vegetation type. Average EEC is for a 48-day period from the initial application.

3. Ecological Toxicity Data Summary

The following toxicity data has been reviewed in conjunction with registration of myclobutanil.

Terrestrial Wildlife Toxicity Data

Common Name	%AI	Toxicity	NOEL	EPA-ID	CATEGORY
Bobwhite Quail	84.5	LD ₅₀ 510 mg/Kg		0144286	C
Bobwhite Quail	84.5	LC ₅₀ >5000 ppm		0144287	C
Mallard Duck	84.5	LC ₅₀ >5000 ppm		0144287	C
Bobwhite Quail	94.2	LOEC >260 ppm	260 ppm	43087901	S
Mallard Duck	94.2	LOEC >260 ppm	260 ppm	43087902	S
Laboratory rat	91.9	Acute oral LD50=1360 g/kg		006370	C
Laboratory rat	84.5	2-gen. Repro LOEL=1000 ppm	200 ppm	004936	C
Laboratory rat	84.5	2-gen. Systemic LOEL=200 ppm	50 ppm	004936	C

Aquatic Organism Toxicity Data

Common Name	%AI	Toxicity	NOEL	EPA-ID	Category
Bluegill sunfish	84.5	96 HR LC50=2.4 ppm		0144285	C
Rainbow trout	84.5	96 HR LC50=4.2 ppm		0141677	C
Water flea	84.5	48 HR EC ₅₀ =11 ppm		0141678	C
Sheepshead minnow	93	96 HR LC ₅₀ =4.7 ppm		42747903	C
Eastern oyster	93	96 HR EC ₅₀ =0.68 ppm		42747901	S
Mysid	93	96-HR LC50 = 0.24 ppm		42747902	C
Fathead minnow		Early life LOEC=2.2 ppm	0.98 ppm	0266119	S

4. Hazard Assessment

Terrestrial Organisms Terrestrial-Acute Risk Quotients (RQs)

Vegetation Type	Peak Maximum EEC	Avian acute RQ---max	Mammal acute RQ--max ¹
Short grass	131	0.03	0.09
Tall grass	60	0.01	0.04
Broadleaf plants/insects	74	0.01	0.05
Fruits/Seeds	8	0.00	0.00

¹Based on a calculated mammal LC50 of 1432 ppm for a small mammal consuming 95% of its BW (LD50/% BW consumed)

No acute levels of concern (LOCs) are exceeded for birds or mammals from the proposed use of myclobutanil on melons.

Terrestrial-Chronic Risk Quotients

Vegetation Type	Average Mean EEC ¹	Avian Chronic RQ	Mammalian Chronic RQ: Reproductive	Systemic
Short grass	30 ppm	0.12	0.15	0.60
Tall grass	13 ppm	0.05	0.06	0.26
Broadleaf plants/insects	16 ppm	0.06	0.08	0.32
Fruits/seeds	2 ppm	0.01	0.01	0.04

¹Average concentration over time (48 day period)--modeled using FATE program with mean Fletcher value as initial input.

No chronic LOCs are exceeded for birds or mammals from the proposed use of myclobutanil on melons.

Hazard to Aquatic Organisms: Acute RQs

Species	LC ₅₀ or EC ₅₀ (ppm)	Peak EEC (from GENEED) (ppm)	RQ
Bluegill sunfish	2.4	0.012	0.00
Rainbow trout	4.2	0.012	0.00

Water flea	11	0.012	0.00
Sheepshead minnow	4.7	0.012	0.00
Eastern oyster	0.68	0.012	0.02
Mysid	0.24	0.012	0.05

No acute LOCs are exceeded for aquatic organisms from the proposed use of myclobutanil on melons.

Acute Risk: The maximum expected residue of myclobutanil in the environment is 131 ppm. This value was calculated using the FATE program, with an initial input of 24 ppm (the maximum "Kenaga" value of 240 ppm/1 lb ai/A for short grass x the application rate of 0.1 lb ai/A). This produces acute risk quotients of 0.03 for birds and 0.09 for mammals, both of which are well below the high risk, restricted use, and endangered species levels of concern (LOCs).

Chronic Risk: Average residues of myclobutanil are expected to be 38 ppm or less for a 48-day period from the time of the first application. This value was calculated using the FATE program, with an initial input of 8.5 ppm (the mean "Fletcher" value of 85 ppm/1 lb ai/A for short grass x the application rate of 0.1 lb ai/A). This results in risk quotients of 0.12 for birds and 0.60 for small mammals, which are below the LOC for chronic risk.

Aquatic Organisms

Acute: Toxicity endpoints for the species tested were compared to the peak EEC (0.01 ppm). RQs ranged from 0.00-0.05, which are well below and LOC for aquatic organisms.

Chronic: The fish early life-stage NOEC (0.98 ppm) was compared to the 56-day GENECC value (0.009 ppm); no chronic hazard was indicated for the proposed use of myclobutanil on hops.

Hazard to Terrestrial Plants:

No data on toxicity of myclobutanil to terrestrial species of plants has been reviewed to date. Therefore, no conclusions regarding possible hazard to these species groups can be made at this time.

Hazard to Non-Target Insects Toxicity Data: No data has been received for review by the Agency regarding toxicity to non-target insects. Therefore, no conclusions regarding possible hazard to these species groups can be made at this time.

Endangered Species: There are no endangered species concerns indicated for birds, mammals, fish, or aquatic invertebrates. Risk to nontarget plants and insects could not be assessed due to lack of data; therefore, the possibility of risk to endangered plant or insect species cannot be precluded. There are endangered plant species present in several

counties in Arizona: Navajo Sedge (Apache, Coconino, and Navajo counties), Cochise Pincushion Cactus (Cochise county), Brady Pincushion Cactus (Coconino county), Silver Pincushion Cactus (Coconino and Mohave counties), San Francisco Peaks Groundsel (Coconino county), Sentry Milk-vetch (Coconino county), Welsh's Milkweed (Coconino county), Arizona Agave (Gila, Maricopa, and Yavapai counties), Arizona Hedgehog cactus (Gila and Pinal counties), Arizona cliffrose (Graham, Maricopa, Mohave, and Yavapai counties), Peebles Navajo cactus (Navajo county), Kearney's Blue-star (Pima county), Nichol's Turk's Head cactus (Pima and Pinal counties), and Pima Pineapple cactus (Pima and Santa Cruz counties). There are no endangered insect species listed for Arizona.

D. Labeling Recommendations

Section 18 Label

Do not apply directly to water, or to areas below the mean high-water mark. Do not contaminate water when disposing of equipment washwater or rinsates.

Product Label

For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Do not apply when weather conditions favor drift or runoff from areas treated.